REMARKS

Entry of the foregoing and reconsideration of the application identified in caption, as amended, pursuant to and consistent with 37 C.F.R. §1.111 and in light of the remarks which follow, are respectfully requested.

By the above amendments, claims 10, 11, 16, 17, 33, 34, 36, 37 and 40 have been canceled without prejudice or disclaimer. The subject matter of claims 10 and 11 has been incorporated into each of independent claims 1, 35 and 38. Claims 12 and 13 have been amended to depend from claim 1 in view of the above cancellation of claim 11.

In the Official Action, claims 1 and 16 stand rejected under 35 U.S.C. §102(e) as being anticipated by or, in the alternative, under 35 U.S.C. §103(a) as being obvious over U.S. Patent No. 6,719,821 (*Yadav et al*). This rejection is moot in view of the above amendments, in which claim 16 has been canceled, and claim 1 has been amended to incorporate the subject matter of (now canceled) claims 10 and 11. In this regard, it is noted that claims 10 and 11 have not been included in the present rejection. Accordingly, for at least the above reasons, withdrawal of the rejection is respectfully requested.

Claims 3, 4, 6-15 and 17-41 stand rejected under 35 U.S.C. §103(a) as being obvious over *Yadav et al* in view of allegedly admitted prior art. As noted above, claims 10 and 11 have been canceled, and the subject matter of such claims has been incorporated into each of independent claims 1, 35 and 38. Applicants submit that independent claims 1, 18, 19, 35 and 38 are non-obvious over the applied art for at least the following reasons.

Independent claim 1 is directed to a high refraction film having a refractive index of from 1.55 to 2.40 comprising inorganic fine particles having an average particle

diameter of from 1 to 200 nm comprising titanium dioxide as a main component, said titanium dioxide containing cobalt, wherein the film further comprises an organic compound binder, and wherein said inorganic fine particles comprising titanium dioxide containing cobalt are dispersed with a dispersant.

Independent claims 18, 19 and 38 are each directed to an anti-reflection film, and independent claim 35 is directed to a high refraction film.

Yadav et al relates to the production and selection of precursors used to produce fine powders of oxides, carbides, nitrides, borides, chalcogenides, metals, and alloys. Methods for making fine powders using the selected precursor include selecting a precursor mixture wherein the mixture comprises at least one metal containing precursor, the metal containing precursor has an average molecular weight of less than 2000 g/mol of the metal, the metal containing precursor has a normal boiling point greater than 350K, and the viscosity of the precursor mixture is between 0.1 to 250 cP. The precursor mixture is processed under conditions that produce the fine powder from the precursor mixture. Fine powders produced are of size less than 100 microns, preferably less than 10 micron, more preferably less than 1 micron, and most preferably less than 100 nanometers.

Yadav et al does not disclose or suggest each feature recited in independent claims 1, 18, 19, 35 and 38. For example, *Yadav et al* does not disclose or suggest a high refraction film or layer having a refractive index of from 1.55 to 2.40 comprising inorganic fine particles comprising titanium dioxide as a main component, said titanium dioxide containing cobalt. In this regard, it is noted that Table 2 of *Yadav et al* contains a laundry list of various ceramic nanoparticle compositions for use in "coatings". See col. 15, lines 5-12. There is simply no indication that such "coatings" are for the formation of a high refraction or anti-reflection film. Moreover, *Yadav et al* provides no

recognition or suggestion of picking and choosing the one "cobalt doped titania" from the numerous compositions disclosed in the laundry list of ceramic nanoparticle compositions, in the formation of such a high refraction or anti-reflection film.

Further, *Yadav et al* has no disclosure or suggestion of a high refraction film or layer having a refractive index of from 1.55 to 2.40, as recited in independent claims 1, 18, 19, 35 and 38. In this regard, the Patent Office has alleged that the coating of *Yadav et al* would inherently have the claimed refractive index in view of the disclosure at column 10, lines 23-33. See Official Action at page 3. Such passage of *Yadav et al* is reproduced below:

> A coating, film, or component may also be prepared by dispersing the fine nanopowder and then applying various known methods such as but not limiting to electrophoretic deposition, magnetophorectic deposition, spin coating, dip coating, spraying, brushing, screen printing, ink-jet printing, toner printing, and sintering. The nanopowders may be thermally treated or reacted to enhance its electrical, optical, photonic, catalytic, thermal, magnetic, structural, electronic, emission, processing or forming properties before such a step.

Such passage discusses general procedures for preparing a coating, film or component. There is nothing in this passage which establishes **with the requisite certainty**, that such coating, film or component inherently possesses refractive index of from 1.55 to 2.40. "To establish inherency, the extrinsic evidence 'must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.'" *In re Robertson*, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999) (emphasis added). "In relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent feature

necessarily flows from the teachings of the applied prior art." *Ex Parte Levy*, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990) (emphasis in original). Here, no evidence or scientific reasoning has been provided which establishes that the coating, film or component of *Yadav et al* inherently possesses refractive index of from 1.55 to 2.40. And certainly, the Patent Office has not shown how the specifically claimed refractive index range is necessarily present as a result of the general procedures discussed at column 10, lines 23-33 of *Yadav et al*. Furthermore, without any indication of the desirability of employing the claimed refractive index range, it quite clearly would not have been obvious to optimize or modify *Yadav et al* to arrive at such range absent an improper resort to Applicants' own disclosure.

Independent claims 1, 35 and 38 are further distinguishable from *Yadav et al*. In this regard, *Yadav et al* does not disclose or suggest that the film further comprises an organic compound binder, and wherein said inorganic fine particles comprising titanium dioxide containing cobalt are dispersed with a dispersant. Concerning such subject matter, the Patent Office has taken the following position at page 4 of the Official Action:

> Lastly, with respect to the actual contents of the coating, it would have been obvious to one skilled in the art at the time of the invention to incorporate an organic binder, organosilane and dispersant in the coating with the cobalt doped titania nanopowder taught by Yadav et al, wherein the claimed compounds are obvious materials utilized conventionally in the art and would have been obvious to one skilled in the art at the time of the invention.

The issue, however, is not whether organic binders and dispersants would have been known in the art. Rather, the relevant inquiry is whether the ordinarily skilled artisan would have found it obvious to modify *Yadav et al* to arrive at the use of such materials in its coating. "[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some

rational underpinning to support the legal conclusion of obviousness." *KSR International Co. v. Teleflex Inc.*, 82 USPQ2d 1385, 1396 (2007), *citing In re Kahn*, 78 USPQ2d 1329, 1336 (Fed. Cir. 2006). In the present case, the Patent Office's rationale set forth above amounts to mere conclusory statements concerning obviousness, without sufficient evidence to support such conclusions.

With further regard to claims 35 and 38, *Yadav et al* is completely silent concerning the recitation that the titanium dioxide has a rutile crystal structure. The Official Action does not appear to explicitly address such claimed subject matter. As well, no sufficient reasons have been given as to why it would have been obvious to modify *Yadav et al* to employ the claimed rutile crystal structure.

Furthermore, the Declaration Under 37 C.F.R. §1.132 of Hiroyuki Yoneyama (hereinafter "Declaration") filed on August 6, 2007, sets forth experimental data showing the **surprising** and **unexpected** nature of aspects of the claimed invention. For example, through the use of cobalt in titanium dioxide fine particles to form anti-reflection films, significant improvements in the light resistance characteristics of such films can be attained. In this regard, as discussed in the Declaration, comparative titanium dioxide fine particles were prepared containing iron (Comparative Example A), aluminum (Comparative Example B) and zirconium (Comparative Example C), in the manner discussed at pages 2-4 of the Declaration. Titanium dioxide fine particles which did not contain an additional metal (Comparative Example D) were also prepared.

Anti-reflection films were then prepared in the same manner as Example 6-27 set forth in the specification, except that the titanium dioxide fine particles used in such example were replaced with the particles of Comparative Examples A to D. The checkerboard adhesiveness and light resistance characteristics of the comparative anti-

reflection films were then evaluated in the manner discussed at page 5 of the Declaration. The results of such evaluation are set forth in Table 1 at page 6 of the Declaration. The experimental results of inventive Example 6-27, which employed cobalt in the titanium dioxide fine particles thereof, have been reproduced in Table 1 for convenience.

As can be seen from Table 1, inventive Example 6-27 exhibited improved light resistance characteristics at 200 and 300 hours, in comparison with each of Comparative Examples A to D. The inventive Example 6-27 was the only antireflective film to exhibit no checkers peeled out of 100 checkers at 200 hours, and 2 or less checkers peeled out of 100 checkers at 300 hours. It is therefore apparent that significant improvements in the light resistance characteristics of the inventive films can be attained, for example, through the use of cobalt in titanium dioxide fine particles in the formation of anti-reflection films. By comparison, *Yadav et al* has no recognition or suggestion of the surprising and unexpected results attainable by employing cobalt in titanium dioxide fine particles in the formation of an antireflection film, in the form of improved light resistance characteristics.

Accordingly, for at least the above reasons, it is apparent that the claims are not obvious over the applied art. Accordingly, withdrawal of the above §103(a) rejection is respectfully requested.

From the foregoing, further and favorable action in the form of a Notice of Allowance is believed to be next in order, and such action is earnestly solicited.

If there are any questions concerning this paper or the application in general, the Examiner is invited to telephone the undersigned.

Respectfully submitted,

BUCHANAN INGERSOLL & ROONEY PC

Date: October 6, 2008 By: _____

Roger H. Lee
Registration No. 46317

P.O. Box 1404
Alexandria, VA 22313-1404
703 836 6620